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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,078	12/23/2004	Susumu Komiyama	043115	7335

38834 7590 03/06/2007  
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP  
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WASHINGTON, DC 20036

EXAMINER
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FINEMAN, LEE A

ART UNIT	PAPER NUMBER
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2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/06/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/519,078	Applicant(s) KOMIYAMA ET AL.	
	Examiner Lee Fineman	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-12 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) 6,7,9-12 and 15-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/23/04, 5/3/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Species I in the reply filed on 28 November 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 6-7, 9-12 and 15-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

### *Drawings*

3. Figures 8 and 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "706" has been used to designate both specimen and IR light (see page 3, lines 10 and 12).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of

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an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

5. The abstract of the disclosure is objected to because of undue length. Correction is required. See MPEP § 608.01(b).

6. The disclosure is objected to because of the following informalities: The specification incorrectly states "near-filed" instead of --near-field-- throughout (e.g., page 5, line 5).

Appropriate correction is required.

### *Claim Objections*

Claims 1-5 are objected to because of the following informalities: Claim 1 includes the limitation "a near-filed" which is incorrect and should be changed to --a near-field--. The dependent claims inherit the deficiencies of the claims from which they depend. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osawa et al., JP 05027180 A in view of Zhang et al., US 6,977,379 and Corle et al., US 5,121,256.

Regarding claims 1 and 5, Osawa et al. disclose in fig. 1 or fig. 2 a light condensing apparatus, characterized in that it comprises: a lens (17) for accepting an incident light (from 5) or emitting an outgoing light, said lens having a base plane (fig. 1) on which a specimen (1) is to be disposed; an antenna (7 or 31) having a probe (7 or 31) disposed away from a base plane of said lens at a distance (figs. 1 or 2); a holder means (9 or 33), which is an arm, for retaining said antenna; and a position control means (11 or 35), which is a triaxial XYZ mechanical stage (in fig. 1), for controlling the position of a tip of said probe by means of said holder means (figs. 1 or 2), whereby operating said position control means allows: the incident light to concentrate as a near-field at a desired position of the specimen on the base plane of said solid immersion or a near-field from a desired position of the specimen to be converted into a propagating wave corresponding thereto and then the propagating wave to be emitted as said outgoing light from said solid immersion lens (see at least the abstract). Osawa et al. discloses the claimed invention except for the lens being a solid immersion lens and the distance the probe is disposed away from a base plane of said solid immersion lens being not more than  $1/4$  of an effective wavelength of the light. Zhang et al. teaches a light condensing apparatus (see figs. 4 and 5) including a solid immersion lens (412 and H1 or H2) having a base plane on which a specimen (18) is to be disposed (column 11, lines 15-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the lens of Osawa et al. a solid

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immersion lens as taught by Zhang et al. to further improve spatial resolution to a sub-micron level (Zhang, column 2, lines 13-14 and column 11, lines 15-35). Corle et al. also teach (fig. 4) a light condensing apparatus including a solid immersion lens (19) and the impact of a path distance of  $1/4$  of the wavelength to the system (column 3, lines 13-19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the distance of the probe to the solid immersion lens be not more than  $1/4$  of an effective wavelength of the light as taught by Corle et al. to prevent interference patterns (Corle, column 3, lines 13-19). The preamble fails to structurally limit the body of claim. Osawa et al. in view of Zhang et al. and Corle et al. meet all of the structural limitations required by the claim in support thereof. As such, Osawa et al. in view of Zhang et al. and Corle et al. must support being an infrared light condensing apparatus in the same way as the structure of the claim.

Regarding claim 2, Osawa et al. in view of Zhang et al. and Corle et al. as set forth above further disclose that said solid immersion lens is composed of a medium (e.g., ZnTe as disclosed in Zhang et al., column 11, lines 20-24) that is low in absorption coefficient (by its transparency) and large in dielectric constant (versus glass) for wavelengths of said incident or outgoing light.

9. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osawa et al. in view of Zhang et al. and Corle et al. as applied to claims 1 and 2 above and further in view of Ferrell et al., US 5,018,865.

Regarding claim 3, Osawa et al. in view of Zhang et al. and Corle et al. as applied to claims 1 and 2 above further disclose that said antenna condenses the incident light upon causing it to geometrically resonate or to pick up a near-field from said specimen in a region of the

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pointed tip of said probe upon causing it to geometrically resonate and then to emit it as a wave propagating in the medium of said solid immersion lens (see at least the abstract and figs. 1 and 2). Osawa et al. in view of Zhang et al. and Corle et al. as applied to claims 1 and 2 above disclose the claimed invention except for said antenna being made of an electric conductor and having a length that is one half of the effective wavelength of said incident or outgoing light. Ferrell et al. teaches in fig. 1A a light condensing apparatus including an antenna (26) with a probe (22) and lens (12) for accepting an incident light (14) or emitting an outgoing light, said lens having a base plane (fig. 1A) on which a specimen (20) is to be disposed, wherein said antenna being made of an electric conductor (column 5, lines 40-41). It would have been obvious to one of ordinary skill in the art to make the antenna of Osawa et al. in view of Zhang et al. and Corle et al. be made of an electric conductor as taught by Ferrell et al. to better control the aperture size of the probe (Ferrell, column 5, lines 40-41). Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the antenna have a length that is one half of the effective wavelength of said incident or outgoing light, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum value or working ranges involves only routine skill in the art. One would have been motivated to make the antenna have a length that is one half of the effective wavelength of said incident or outgoing light for the purpose of ensuring subwavelength resolution. *In re Aller*, 220 F.2d 454, 456 105 USPQ 233, 235.

Regarding claim 4, Osawa et al. in view of Zhang et al. and Corle et al. as applied to claims 1 and 2 above further disclose that said antenna (7 or 31) is configured as a sharply pointed end of a rod-like probe (figs. 1 or 2) and to project from said probe towards said

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specimen to cause the geometrically resonating incident light condensed on said antenna to concentrate as a near-field at said probe tip or to take out a near-field from a surface of said specimen (see at least the abstract and figs. 1 and 2). Osawa et al. in view of Zhang et al. and Corle et al. as applied to claims 1 and 2 above disclose the claimed invention except for said antenna being made of an electric conductor having a radius of curvature less than a diffraction limit of said incident or outgoing light. Ferrell et al. further teach wherein said probe tip being made of an electric conductor (column 5, lines 40-41) with a sharply pointed rod-like tip (fig. 1B) having a radius of curvature less than a diffraction limit of said incident or outgoing light (column 2, lines 41-44). It would have been obvious to one of ordinary skill in the art to make the antenna of Osawa et al. in view of Zhang et al. and Corle et al. be made of an electric conductor and have a radius of curvature less than a diffraction limit of said incident or outgoing light as taught by Ferrell et al. to better control the aperture size of the probe (Ferrell, column 5, lines 40-41).

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ghislain et al., US 6,642,517 B1 and US 5,939,709 disclosed near-field scanning systems with solid immersion lenses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LAF

1 March 2007

  
MARK A. ROBINSON  
PRIMARY EXAMINER